Business Cycle Developments, Financial Fragility, Housing and Commodity Prices

Comments on
Financial (in)stability, supervision, and liquidity: a dynamic general equilibrium approach

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1 Introduction

This paper uses a simple dynamic stochastic general equilibrium framework to analyze the role of supervisory and monetary authorities in ensuring financial stability. The paper allows for a heterogeneous banking sector and endogenous default probabilities for banks and firms.

Model features:

- There are six agents in the model: households, firms, borrowing banks, lending banks, a supervisory authority and a central bank.

- “Borrowing banks” are those who borrow on the interbank market and lend to firms, and “lending banks” are those who lend on the interbank market and collect deposits from households. There is thus a spread between the lending rate on deposits and the borrowing rate on loans.

- There is also an interbank interest rate that is determined through the equilibrium for the demand and supply of loans by banks with or without intervention by the central bank.

- The model is otherwise a standard RBC model with risk averse consumers who get utility from consumption and disutility from work effort and who also choose how much deposits to hold.

- Firms are risk neutral and maximize the present value of profits net of a default cost. They finance new capital purchases through loans from banks, and determine what fraction of their loans they will repay. If they do default on some fraction of their borrowing, then they pay a quadratic search cost on the defaulted amount. There is also an adjustment cost if firms wish to change their real borrowing.

- Banks are risk averse and maximize the present discounted value of profits. Like firms, they use the consumer’s intertemporal MRS as the discount factor. The profits of merchant and deposit banks
depend, respectively, on the repayment rates $\alpha_t$ and $\delta_t$ of firms of merchant banks. Each type of bank also obtains positive utility whenever its own funds $F_t$ are above the minimum capital requirement imposed by the supervisory authority.

- In the short-run, the central bank may inject (or withdraw) liquidity into (from) the market if the interbank interest rate $i$ is above (below) some target rate $\bar{i}$.

- Finally, the supervisory authority sets the capital requirement ratio denoted $k$ and the weights on the loans to firms $L^b_t$, on the market book of banks $B_t$, and the interbank loans $D^{bs}_t$. These weights are indicated by $\bar{\omega}, \tilde{\omega}, \bar{\bar{\omega}}$, respectively.

- There is a single shock to the model, namely, the TFP shock.

2 Results

The model is calibrated to the Luxembourg economy, which is an important banking and financial center. The simulations are used to examine some of the key features of the model and also to conduct policy experiments.

- One of the important features of the model is the financial accelerator. Here a positive productivity shock increases firm and bank repayment rates. This reduces the borrowing rate, $r^b_t$, or equivalently, the risk premium, and acts to further stimulate output and employment.

- The paper also examines the impact of various Basel-type changes in risk-based requirements. This is important because much of the Basel-type policy experiments have been conducted in partial equilibrium settings. To capture Basel-II requirements which link the credit weight to risk measures, the paper assumes that the weight $\tilde{\omega}_t$ varies inversely with the repayment rate $\alpha_t$. The paper shows
that this acts as a further positive shock on loan supply, which further the risk premium and increases output and employment.

• A third experiment has to do with liquidity injections. Typically, we may think of a liquidity injection withdrawal (or injection) as accompanying a positive (or adverse) productivity shock. Suppose a positive productivity shock occurs. As described earlier, this tends to reduce interest rates so the central intervenes to stabilize the interbank interest rate. The central bank action favors the deposit bank at the expense of the merchant bank. The lower decline in interest rates causes merchant banks to reduce their loans to firms. As a result, the repayment rate is lower, leading to smaller increases in real activity. Thus, in the short term, the central bank intervention mitigates the impact of a positive productivity shock. Over the longer term, however, the central bank intervention tends to keep interest rates below their equilibrium levels, implying that the firm repayment rate remains higher. This effect tends to make the effect of the shock more persistent.

However, central bank interventions lead to less financial instability in the short run or the long run, as measured by the volatility of the merchant bank repayment rate.

• Finally, the paper examines the standard deviations, correlations with output, and autocorrelations of a set of financial variables as well as those of employment and output. The financial variables include the various interest rates and repayment rates. The model is able to reproduce such features as the negative correlation of output with interest rates, procyclical repayment rates, and countercyclical risk premia.
3 Comments and Questions

The model provides a useful break with the standard RBC literature by concentrating on the interaction of real and financial variables. It provides a useful bridge between the standard RBC issues and those arising from the literature on bank regulation and central bank liquidity provision. Nevertheless, I have some comments and suggestions.

- The earlier financial accelerator models were built on asymmetric information and agency costs. (See, for example, Bernanke, Gertler, and Gilchrist (1999) or Kiyotaki and Moore (1997).) Although the current paper goes beyond the earlier contributions in terms of modeling the supply side of the loan market, nevertheless it can be argued that the “costs” of credit market frictions among different players have been subsumed into black box quadratic adjustment costs terms. As such, the paper possesses a reduced-form flavor in that the financial accelerator-type phenomena cannot be traced back to the original informational costs among players. How important would that be in examining the current situation in world financial markets where information costs arising partly from asymmetric information problems have led to the near collapse of lending on a variety of markets, including the interbank money market and the commercial paper market?

- More generally, researchers typically face a trade-off in terms of developing a model that is quantitatively tractable versus one which possesses true microfounded features. Since this paper is being given in the EACBN program which promotes the development of DSGE models for quantitative policy analysis, one could ask what the mix should be in a particular instance.

- The current global financial crisis has made much recent work done by economists to appear rather outdated. Many traders in actual financial markets such as hedge funds which are not subject to
Basel I and II risk-based requirements have been operating with excessive leverage and trading extremely complex financial instruments for which it has been very difficult to assess counterparty risk. How would the results change if we also incorporated much more lightly regulated financial institutions into the current model?

• One problem in the recent experience is that it not only displays asymmetric information problems but an overall increase in uncertainty. It appears none of the parties, including the regulators, have been able to assess the risk associated with the complex financial instruments that have been trading in markets. How could the paper be extended to incorporate the role of uncertainty and also, perhaps, learning about unknown probabilities associated with different outcomes?

• In the model, the financial transactions are implemented through individual trades among the banks. How would the results change if there was a clearing house to facilitate trades among the different parties? Could the existence of such a clearing house be derived endogenously?